Received May 30, 1995
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Kinser

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

ENVIRONMENTAL SERVICES DIVISION
REGION 7
25 FUNSTON ROAD
KANSAS CITY KANSAS 66115

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West Lake Landfill
MBD079900932
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Bridgeton Mo
5-25-95
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MAY 25 1995

MEMORANDUM

SUBJECT Appendix A *Draft* Sampling and Analysis Plan
Remedial Investigation/Feasibility Study Work Plan
West Lake Landfill Operable Unit #2
Bridgeton Missouri

FROM Douglas J Brune
Environmental Engineer EDSB/ENSV

THRU Jeffrey A Wandtke
Regional Quality Assurance Manager EDSB/ENSV

TO Steven Kinser
RPM SUPR

I have completed review of the subject document prepared by Golder Associates Inc for Laidlaw Waste Systems (Bridgeton) Inc and dated April 1995 according to Region 7 ENSV s Standard Operating Procedure (SOP) 1330 2 "Review of Quality Assurance Related Documents" Appendix A-1 was the Field Sampling Plan (FSP) and Appendix A-2 was the Quality Assurance Project Plan (QAPP)

Attached please find Attachment A "QA Document Review Checklist" Based on this completed checklist and the comments presented below I am recommending resubmission

Note According to page 12 of the Statement of Work Attachment II to Administrative Order of Consent Docket No VII-94-F-0025

> Initial samples shall be analyzed for volatile and nonvolatile organic compounds total petroleum hydrocarbons pesticides PCBs metals and cyanides

There appears to be no clear definition or identification of the analytes specific to each "group" of compounds For the most part the authors use the analytes specific to CLP RAS [contract lab program routine analytical services] However the authors define "nonvolatile organic compounds" as semi-volatile organic compounds or SVOCs See also comment 1 in Sampling Procedures

Also the Health and Safety Plan was not reviewed

Project Objective

1 The condition of the Statement of Work (§ 2 3 2 ¶ 2 page 6) is not satisfied by either the FSP or the QAPP Neither document specifies the analytical laboratory(s) or the qualifications of laboratory personnel It is recommended that when an analytical laboratory(ies) is retained that a laboratory-specific Quality Assurance Project Plan be submitted for EPA approval

2 Project personnel including responsibilities are presented in the QAPP There is no line authority diagram presented in the document however and feedback mechanisms (pathways for corrective action or consultation) are not identified for the site activities

3 QAPP Completeness, Representativeness, and Comparability, §4 3 page 4-3 The definition for completeness is not quite correct The definition as presented in §13 1 is correct i e completeness is the percent of valid data generated from the samples planned for collection

Note Since the author s completeness goal is not 100- critical samples should be defined Critical samples are those which valid data is necessary in order to meet the project objectives A contingency plan should be developed to ensure generation of valid data from these critical samples

4 QAPP Data Validation §10 2 2 page 10-2 The "Contractor Data Reviewer" is not included in §3 0

Sampling Procedures

1 The FSP tables and the QAPP tables list boron as a target analyte but neither the FSP nor the QAPP present the rationale for inclusion

2 QAPP Table 5-1

a) The pH of water samples collected for determinations of volatile organic compounds (VOCs) should be adjusted to less than 2 with 1 1 HCl particularly when the aromatic compounds i e BTEX are of concern Lowering the sample pH destroys any microbes or "bugs" which may degrade contaminants thereby biasing the sample results low

b) Also the samples should be cooled to 4°C not "40"

c) Some uranium-determinative methods suggest adjusting samples H with HCl not HNO_3

Note Table 4-3 in the FSP identifies "total" and "dissolved" radionuclide determinations The sample should be filtered prior to adjusting the sample pH

Analytical Methods

1 Required analytical detection limits for all analytes are presented as "Health-Based Criteria" in Tables 4-2 4-3 4-4 4-5 and 4-6 of the FSP and Table 2-2 2-3 2-4 2-5 and 2-6 of the QAPP According to table footnotes "actual quantitation limits provided by the laboratory will be equal to or less than the health-based criteria The actual quantitation limits will be provided by the laboratory in the addendum to the QAPP " With a few exceptions the detection and quantitation limits of the respective methods are adequate to satisfy site objectives The desired detection limits for the parameters in the tables attached are not attainable with the proposed sampling methodology without compromising accuracy and precision

Several FSP Table and QAPP Table parameters do not have detection or quantitation limits presented in the methodology These parameters are aroclor-1016 aroclor-1221 aroclor-1232 aroclor-1248 aroclor-1254 and aroclor-1260 QAPP Table 2-3 parameters which do not have detection or quantitation limits presented in the methodology include thorium-230 total and dissolved and uranium-234 235 and 238 total and dissolved As such their detection and quantitation at or below the Health-Based Criteria is not certain

2 Although the FSP and the QAPP comprise the Sampling and Analysis Plan neither the FSP or the QAPP discuss the various analytical methodologies in terms of rationale for implementation methodology limitations and methodology modifications § 2 6 ¶ 2 page 2-5 of the QAPP states that "actual analytical methods will be determined by the appropriate health-based criteria and will be submitted to the EPA as an addendum to the QAPP " Similarly § 4 2 page 4-3 of the QAPP states that "SOPs for laboratory analyses will be provided by the chemical analytical laboratory, and will be submitted or referenced in the addendum to the QAPP " The tables in <u>this</u> QAPP present the <u>anticipated</u> methodologies

Several analytes listed in QAPP tables are not included in the respective methods as target analytes These analytes however can be identified and quantitated by the proposed methodologies if they are present in the calibration and check standards i e boron by SW-846 Method 6010 carbazole and di-n-butyl phthalate by SW-846 Method 8270 and endrin ketone by SW-846 Method 8080

Acetone acrylonitrile carbon disulfide trans-1 4-Dichloro-2-butene 2-hexanone methyl ethyl ketone (or 2-

butanone) methyl iodide methyl isobutyl ketone (or 4-Methyl-2-pentanone) methylene bromide and vinyl acetate are listed in the FSP and QAPP tables but are not listed as target analytes by SW-846 Method 8260 The rationale for this according to Method 8260 is that low-molecular weight halogenated hydrocarbons aromatics ketones nitriles acetates acrylates ethers and sulfides are more soluble in water resulting in quantitation limits approximately ten times higher because of poor purging efficiency These compounds could be better identified and quantitated using SW-846 Method 8015A

Total petroleum hydrocarbons by Method 8015M is listed as a parameter in the FSP and QAPP tables However this method could not be located in the SW-846 methods manual

There appears to be a minor transcription error in the aqueous sample parameter list (Table 4-2 of the FSP Table 2-2 of the QAPP) The proposed analytical methodology for nitrate/nitrite is listed as 353 but it is actually 353 1

The FSP and QAPP tables list alpha-Chlordane and gamma-Chlordane as determinable by SW-846 Method 8080 However using the standards that this method specifies these compounds cannot be determined individually but will be determined as "technical chlordane " which is a mixture of alpha-Chlordane gamma-Chlordane heptachlor nonachlor (cis- and trans-) and chlordenes Separate standards for these compounds will have to be employed (such as those used in the CLP SOW) or they cannot be accurately identified and quantitated

As presented in the table above for aqueous parameters several PAH compounds i e benzo(a)anthracene benzo(a)pyrene benzo(b)fluoranthene dibenzo(a h)anthracene and indeno(1 2 3-cd)pyrene are not determinable at a level that will satisfy the Health-Based Criteria As such it is recommended that a high performance liquid chromatography methodology (e g SW-846 Method 8310 "Polynuclear Aromatic Hydrocarbons") be employed to determine these compounds in aqueous samples With fluorescence detection these compounds are determinable far below the required criteria

For the other parameters presented in the aqueous and soil/sediment tables above modifications to the proposed methodology will likely be required to meet the proposed criteria Though larger sample volumes will result in lower quantitation limits precision will become poorer as the distance between the quantitation limit and the method detection limit is marginalized

3 Regarding completeness § 4 3 page 4-3 of the QAPP presents numerical completeness goals for the project The surface water and sediment sample goal is 80- completeness Since this appears

to be a tolerant objective perhaps critical samples should be identified or a rationale presented as to why lower completeness will be tolerated for these samples only

4 Laboratory Analysis, §9 3 page 9-2 Numerical quality control limits for laboratory accuracy and precision are not presented in either the FSP or the QAPP The authors state that such limits are found in the proposed methods The SW-846 methods identify a means for assessing precision and accuracy on a lab-specific basis The authors should establish the data quality objectives in order that a lab able to provide data of such quality can be found

Field and Laboratory QC Samples

1 Laboratory quality control is not addressed in the QAPP § 4 1 ¶ 7 page 4-2 of the QAPP states that the "level of laboratory QC effort for the testing of the parameters will conform to the Standard Operating Procedures (SOPs) for each respective constituent These SOPs will be provided or referenced in the addendum to the QAPP "

2 Tolerance limits for field duplicate samples should be established prior to generation of environmental data in order to avoid subjective evaluation of resulting data

Data Review, Validation and Reporting

1 FSP Data Quality §3 3 page 3-3 The authors propose laboratory data will be "Level III" According to *Data Quality Objectives for Remedial Response Activities* EPA/540/G-87/003 March 1987 Level III is designed to provide laboratory analysis standard EPA-approved procedures other than CLP RAS [Contract Lab Program Routine Analytical Services] this level is used to obtain similar analysis with less documentation

According to the FSP §4 2 SW-846 methodologies are proposed According to the QAPP §10 2 2 page 10-2 the authors state the "Contractor Data Reviewer" will use the CLP data validation functional guidelines to conduct a systematic data review It is not clear how a review can be conducted using the CLP Validation functional guidelines can be conducted if the entire CLP data package is not provided

Note Level IV data is CLP data Level IV data is validated using the functional guidelines Level II data is "CLP-equivalent" with less documentation However most QA plans fail to provide validation procedures

If you have any questions please contact me at x5180

Attachments

R7QAMO Activity Number 95-QQ114
R7QAMO Document Number 95170

Attachment 2

QA Document Review Checklist

Project/Plan Name Appendix A, *Draft* Sampling and Analysis Plan, Remedial Investigation/Feasibility Study Work Plan, West Lake Landfill Operable Unit #2, Bridgeton, Missouri

Activity Number 95-QQ114 Document Number 95170

Deficiencies were found in the elements checked below
(See the attached review report for comments)

1 Project Objective

____ Objective or scope of the data collection activity
____ Intended use of the data
XXX Action level required detection limits data quality objectives
XXX Project participant/responsibility table line authority diagram

2 Sampling Procedures

____ Sampling network and rationale
____ Sampling schedule locations frequency duration
XXX Sample matrices target analyte
____ Sampling/decontamination procedures
XXX Sample containers preservation holding times
____ Sample shipment/transportation coordination with the laboratory
____ Sample custody and documentation of field activities

3 Analytical Methodology

XXX Quality of written procedure or choice of reference
XXX Method detection limit precision accuracy comparability
XXX Laboratory documentation

4 Field and Laboratory QC Samples

XXX Field QC elements
____ Laboratory QC elements
____ Frequency of QC checks
XXX Control limits and corrective actions

5 Data Review Validation and Reporting

XXX Review process
XXX Acceptance/rejection criteria for validation
XXX Data deliverables

____ Approval Recommended
____ Approval Recommended w/Comments
XXX Resubmission Recommended

R7QAMO Reviewer Douglas J Brune
Completion Date May 22, 1995

AQUEOUS SAMPLE PARAMETER LIST

PARAMETER	ANALYTICAL METHOD & MDL/EQL	HEALTH BASED CRITERIA
1 2-Dibromoethane (Ethylene Dibromide)	SW 846 8260 0 1 µg/L[( )(b)]	0 075 µg/L
1 2 3 Trichloropropane	SW-846 8260 0 32 µg/L[(b)]	0 15 µg/L
Benzo(a)anthracene	SW 846 8270 10 µg/L	9 2 µg/L
Benzo(a)pyrene	SW 846 8270 10 µg/L	0 2 µg/L
Benzo(b)fluoranthene	SW-846 8270 10 µg/L	9 2 µg/L
bis(2 Chloroethyl)ether	SW-846 8270 10 µg/L	0 92 µg/L
Dibenzo(a h)anthracene	SW 846 8270 10 µg/L	0 92 µg/L
3 3 Dichlorobenzidine	SW 846 8270 20 µg/L	15 µg/L
bis(2 Ethylhexyl)phthalate	SW-846 8270 10 µg/L	6 µg/L
Hexachlorobenzene	SW 846 8270 10 µg/L	0 66 µg/L
Hexachlorocyclopentadiene	SW 846 8270 10 µg/L	0 15 µg/L
Indeno(1 2 3 cd)pyrene	SW 846 8270 10 µg/L	9 2 µg/L
2 Nitroaniline	SW 846 8270 50 µg/L	2 2 µg/L
Nitrobenzene	SW 846 8270 10 µg/L	3 4 µg/L
N-Nitrosodi n propylamine	SW-846 8270 10 µg/L	0 96 µg/L
Pentachlorophenol	SW 846 8270 50 µg/L	1 µg/L
Gross Beta Total and Dissolved	SW-846 9310 4 pCi/L	1 pCi/L

( ) The detection limit for this compound was determined to be 0 1 µg/L when a narrow bore capillary column was used With a wide bore capillary column the detection limit was determined to be 0 06 µg/L All other volatile compounds (those not listed in the above table) can be identified and quantitated at or below the Health based Criteria using either a wide bore or a narrow bore capillary column

(b) The values listed are method detection limits (MDLs) The estimated quantitation limit (EQL) for these parameters is 5 µg/L with a 5 mL purge and 1 µg/L with a 25 mL purge The EQL is the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions The EQL is generally 5 to 10 times the MDL and is nominally chosen to simplify data reporting For many analytes the EQL analyte concentration is selected for the lowest non zero standard in the calibration curve Sample EQLs are highly matrix dependent The EQLs listed herein are provided for guidance and may not always be achievable

SEDIMENT/SOIL SAMPLE PARAMETER LIST

PARAMETER	ANALYTICAL METHOD & EQL[( )(b)]	HEALTH BASED CRITERIA
1 2 Dibromoethane (Ethylene Dibromide)	SW 846 8260 5 mg/Kg	3 4 mg/Kg
Benzo(a)anthracene	SW 846 8270 660 mg/Kg	390 mg/Kg
Benzo(a)pyrene	SW-846 8270 660 mg/Kg	39 mg/Kg
Benzo(b)fluoranthene	SW 846 8270 660 mg/Kg	390 mg/Kg
bis(2 Chloroethyl)ether	SW 846 8270 660 mg/Kg	260 mg/Kg
Dibenzo(a h)anthracene	SW 846 8270 660 mg/Kg	39 mg/Kg
3 3 Dichlorobenzidine	SW 846 8270 1300 mg/Kg	640 mg/Kg
2 4 Dinitrophenol	SW 846 8270 3300 mg/Kg	2000 mg/Kg
Hexachlorobenzene	SW 846 8270 660 mg/Kg	180 mg/Kg
Indeno(1 2 3 cd)pyrene	SW 846 8270 660 mg/Kg	390 mg/Kg
2-Nitroaniline	SW 846 8270 3300 mg/Kg	61 mg/Kg
3 Nitroaniline	SW 846 8270 3300 mg/Kg	3100 mg/Kg
Nitrobenzene	SW 846 8270 660 mg/Kg	510 mg/Kg
N Nitrosodi n propylamine	SW 846 8270 660 mg/Kg	41 mg/Kg
Heptachlor epoxide	SW-846 8080 56 mg/Kg	31 mg/Kg
Aroclor-1242	SW-846 8080 44 mg/Kg	37 mg/Kg

[(a)] The EQL is the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions The EQL is generally 5 to 10 times the MDL and is nominally chosen to simplify data reporting For many analytes the EQL analyte concentration is selected for the lowest non zero standard in the calibration curve Sample EQLs are highly matrix dependent The EQLs listed herein are provided for guidance and may not always be achievable

[(b)] For Method 8260 analytes in water miscible liquid waste multiply EQL by 50 in high-concentration soil and sludge multiply EQL by 125 and in non-water miscible waste multiply EQL by 500 For medium-level Method 8270 analytes in soil and sludges by sonicator multiply EQL by a factor of 7 5 For other Method 8270 analytes in non water miscible waste multiply EQL by a factor of 75 For Method 8080 analytes in groundwater multiply EQL by a factor of 10 in low concentration soil by sonication with GPC cleanup multiply EQL by 670 in high-concentration soil and sludges by sonication multiply EQL by 10000 and in non water miscible waste multiply EQL by 100000 The EQLs listed for soil and sediment are based on wet weight Normally Method 8270 and Method 8080 data is reported on a dry weight basis therefore EQLs will be higher based on the % dry weight of each sample This is based on a 30 g sample and gel permeation chromatography cleanup

West Lake Landfill
OU 2

JUN 0 5 1995

Ward E Herst, CPHG, CEM
Program Director Hydrogeology
Golder Associates Inc
200 Union Boulevard
Suite 500
Lakewood, Colorado 80228

Dear Mr Herst

Appendix A Draft Sampling and Analysis Plan for the Operable Unit 2 work plan has been reviewed I am enclosing the report provided to me by our Regional Quality Assurance Manager His recommendation is that the document be resubmitted It may be possible to provide replacement pages which address the concerns expressed concerning the plan and thus avoid the necessity of resubmitting the entire plan For ease and speed of my subsequent review your response should expressly address each comment as presented in the enclosed memorandum If significant changes in the content of the plan are made I will request that another review be made by our Regional Quality Assurance Manager If, on the other hand, the specific comments contained in his memorandum are addressed and it is readily discernable that only changes pertinent to the comments have been made in the Appendix I will be able to complete the review myself and will save considerable time in reaching a decision on final approval

If you have any questions or wish to discuss the comments directly with the author Mr Brune s direct telephone number is 913/551 5180 As always feel free to contact me any time if I may be of any assistance

Sincerely,

Steven E Kinser
Remedial Project Manager
Removal Enforcement Section
Superfund Division

Enclosure

cc Michael D Hokley, Esq
Spencer Fane Britt & Browne
Jalal El Jayyousi, MDNR
David Hoefer CNSL

SUPR SPFD REML KINSER ch x7775 6/2/95 DISK #5 RIFSAPXA

REML	REML
KINSER	KING
SEK 6/5/95	SEK 6/5/95

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JUN 0 5 1995

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Sincerely

Steven E Kinser
Remedial Project Manager
Removal Enforcement Section
Superfund Division

Enclosure

cc Michael D Hokley Esq
Spencer Fane Britt & Browne
Jalal El Jawwousi MDNR
David Hoeter CNSL

RECYCLE